Catalogue of Land Resource Surveys in Ontario of Major Value in Forest Management

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Toronto

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Deputy Minister

INTRODUCTION

Within Ontario various surveys have been conducted in which selected physical attributes of the land have been described within delineated map units. Each survey was designed for a specific purpose which dictated the choice of attributes to be recognized and the limits of the classes used in describing them. Also the intensity of survey and the scale of mapping vary according to purpose and budget. The purpose may not always be specifically for forest management, but any soil/land survey may still provide information that can be interpreted for forestry in a useful way. Such interpretation requires a knowledge of how the forest responds to specific land conditions. To contribute to that knowledge and to establish a practical framework within which to organize it, other regional surveys of forest ecosystems have been established. These surveys are concerned more with elucidating what forest conditions and rates of production coincide with what soil/site conditions than with mapping exactly where they occur, although mapping may be a part of the program. This report lists and explains those surveys of physical land features and forest ecosystem characteristics within Ontario that are of the greatest use to forestry staff. The province-wide Forest Resources Inventory is not included in this report, because all forestry staff are completely familiar with it and because it does not include any soil or land resource information.

The report is organized in two main sections. The first deals with the various types of survey and is divided into four subsections covering (i) surficial geology surveys, (ii) land inventory, (iii) soil surveys and (iv) forest ecosystem surveys. In each of these subsections the nature and extent of the appropriate surveys are explained and their usefulness in forestry is discussed. The second section is organized on an MNR administrative region basis. For each region the areas covered by the various surveys are listed. Reference is made to the master list of sources which is given at the end of the report.

The user should always bear in mind that every survey has its limitations and no survey is completely accurate. It is impossible to map and describe all the many variations of soil and site features that occur throughout a survey area. Map units are delineated and described only to a certain confidence level or reliability. This level is set by factors such as accessibility and amount of ground sampling, complexity of the land, scale of mapping and attributes to be mapped. Obviously some of these are economic factors. If you are prepared to spend more money, you can get a better survey. Very frequently the reliability of a finished survey varies within the one map area, sometimes quite remarkably. The golden rule for the user is to accept the survey as a guide but not as a gospel. Surveys are basically planning tools. They only narrow the planners' guesses. Final silvicultural actions should be based on proper confirmation of field conditions within the stand.

1. TYPES OF LAND RESOURCE SURVEY

1.1 SURFICIAL GEOLOGY SURVEYS

Several types of survey fall in this category. Small scale mapping of glacial and post-glacial landforms covers much of the province. More detailed maps at larger scale depict the surficial geology within specific areas, mainly in Southern Ontario. The recent Ontario Engineering Geology Terrain Study covers much of Northern Ontario and the north part of Southern Ontario and warrants special attention from foresters. In fact, maps from this study provided a basis for further soil survey in the Chapleau-Foleyet area.

Bedrock outcrops may be mapped in these surficial geology surveys. However, the many published studies of bedrock geology, conducted for entirely different purposes, are not included in this catalogue.

A final survey included in this group is the current Ontario Peatland Inventory.

1.1.1 Surficial Geology of Northern Ontario

Agencies: 1/ Ontario Department of Lands and Forests, 1965
2/ Geological Survey of Canada, 1963
3/ Ontario Ministry of Natural Resources, 1984

Map Scale: 1/ and 2/ = 1:506 880
3/ = 1:250 000

Coverage: 1/ All of Northern Ontario south of Latitude 51°N west of Longitude 86°W.
2/ The area between Latitudes 51° and 53°N and Longitudes 86° and 94°W.
3/ All of Ontario north of Latitude 51°N, except Carroll Lake 52M and Trout Lake 52N map sheets.

Attributes: These surveys show the range of surficial material deposited during and following the last glaciation. The mode of deposition (e.g. morainal, lacustrine) is the major classifying criterion. Some information on the texture of material and local morphological features is provided. In Survey #2, a second map shows bedrock and drift distribution in three classes based on abundance of rock outcrop.

Methodology/Reliability: The mapping is based heavily on air photo-interpretation, with ground checking along the major access routes or, in Survey #3, by helicopter access. Despite the small scale and limited ground verification, these maps represent an accurate and valuable reconnaissance level survey.

Uses/Limitations: The survey provides a broad perspective on the general nature of the land, but is limited in its use by the small scale of the maps. The information given can be interpreted, after suitable checking of local field conditions, in terms of the likely texture, stoniness and depth of soil, the topography and the drainage pattern within the map units.

Products/Sources:

1/ Boissonneau, A.N. 1965a. Surficial geology, Algoma-Cochrane. Ont. Dep. Lands and Forests. Map S365.
_____. 1965b. Surficial geology, Algoma, Sudbury, Timiskaming and Nipissing. Ont. Dep. Lands and Forests. Map S465.

Zoltai, S.C. 1965a. Surficial geology, Kenora-Rainy River. Ont. Dep. Lands and Forests, Map S165.
_____. 1965b. Surficial geology, Thunder Bay area. Ont. Dep. Lands and Forests. Map S265. **Source:** I, J

2/ Prest, V.K. 1963. Surficial geology. Red Lake-Lansdowne House area, Northwestern Ontario. Geol. Survey of Canada. Paper 63-6 (incl. 2 maps). **Source:** B

3/ Ontario Ministry of Natural Resources. Ont. Centre for Remote Sensing. 1984. Surficial geology mapping of Northern Ontario. In progress. Draft copies available from OCRS. **Source:** D

1.1.2 Physiography of Southern Ontario

Agency: Ontario Ministry of Natural Resources, 1975 (and former Ontario Department of Mines and Northern Affairs, 1972).

Map Scale: 1:253 440

Coverage: All of Ontario south of Latitude 46°N, plus St. Joseph Island.

Attributes: This survey shows the glacial and post-glacial landforms of the area. Some information on the texture of the soil material is given, but not for all units.

Methodology/Reliability: The mapping is based on airphoto interpretation and much ground checking. The maps are accurate and very reliable.

Uses/Limitations: The survey provides a broad perspective on the general nature of the land, but is limited in its use by the small scale of the maps. The information given can be interpreted, after suitable checking of local field conditions, in terms of the likely texture, stoniness and depth of soil, the topography and the drainage pattern within the map units.

Products/Sources:

Chapman, L.J. and D.F. Putnam. 1972. The physiography of Southern Ontario. Ont. Dep. Mines and Northern Affairs. (Maps 2224, 2225, 2226, 2227, 2228). Also accompanying reports.

Sources: J, O

1.1.3 Quaternary Geology of Southern Ontario

Agencies: 1/ Ontario Ministry of Natural Resources
Ontario Division of Mines
2/ Geological Survey of Canada

Map Scale: Variable, but most at 1:63 360 or 1:50 000.

Coverage: Most of southern Ontario and a few areas in the Sudbury-North Bay area. See p. 5,6.

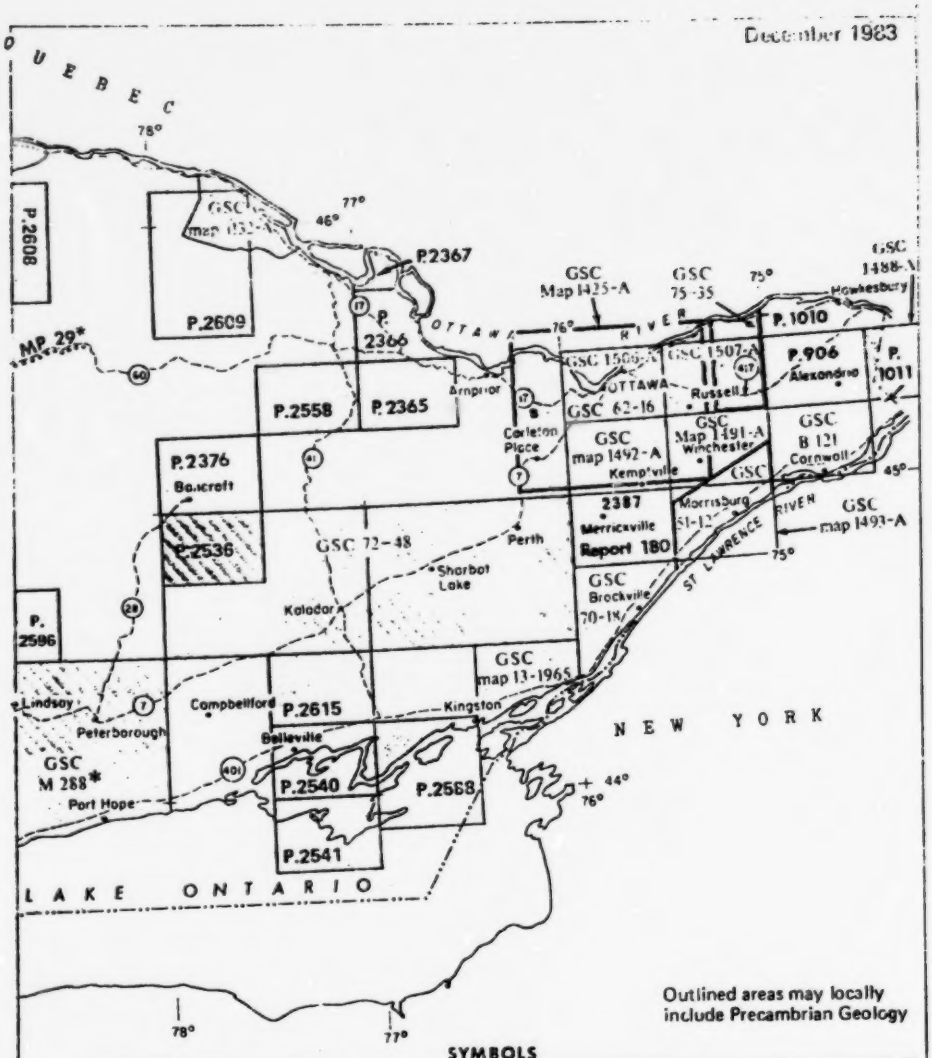
Attributes: The glacial and post-glacial deposits are mapped and described, often in stratigraphic sequence, in terms of texture and mode of deposition, topography and drainage.

Methodology/Reliability: The mapping is based on airphoto interpretation with extensive ground checking. Survey demonstrates high degree of reliability.

Uses/Limitations: The maps and accompanying reports provide an excellent summary of the glacial landforms and history of surveyed areas. Data and photographs are included in the reports. Reports provide useful background to the interpretation of Ontario Soil Survey maps and reports. Scale is appropriate for engineering interpretations and general level forest operations planning.

Products/Sources: The various maps and reports available in these series and sources are listed on the following two pages.

Sources: 1/ J, N
2/ E



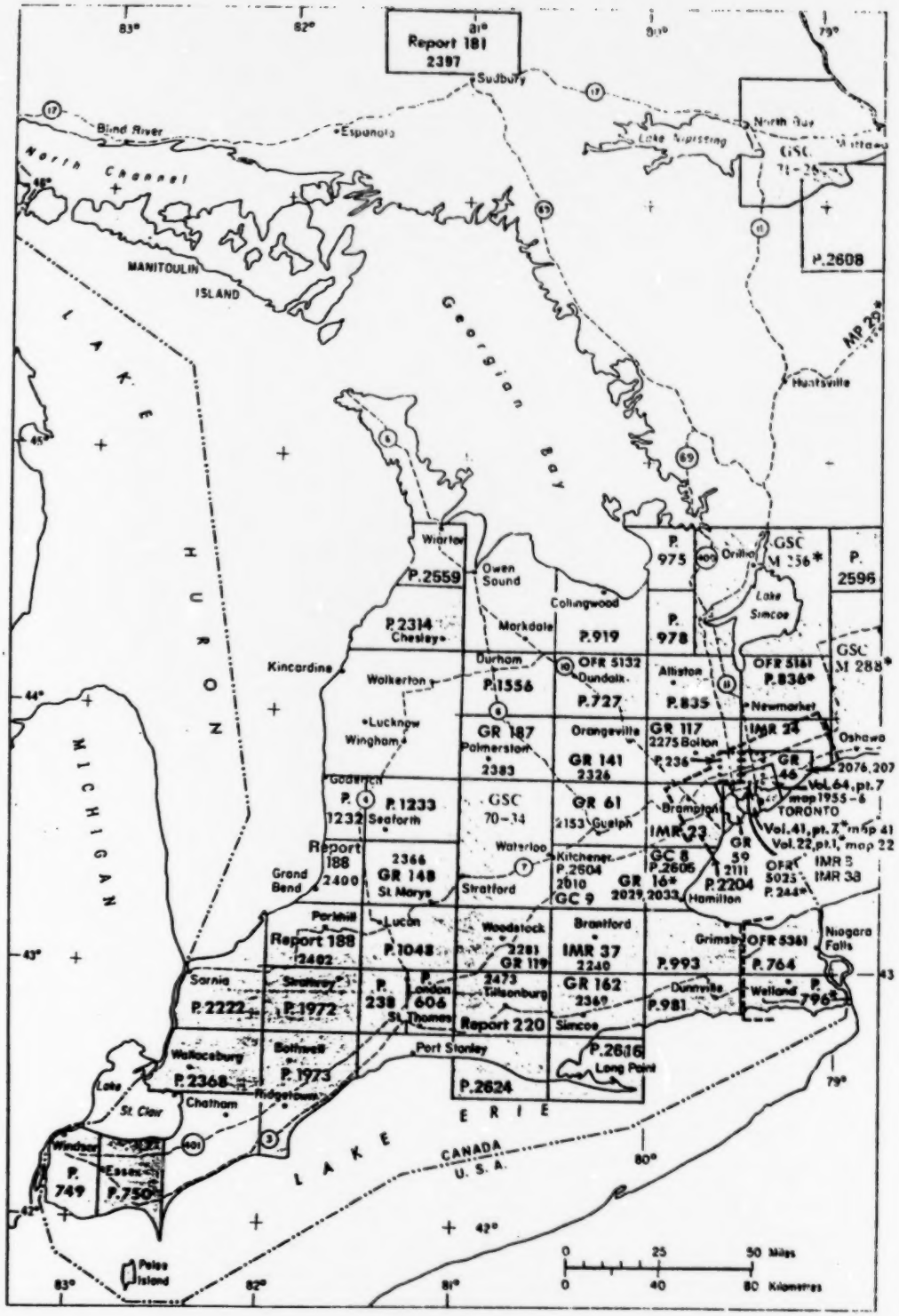
SYMBOLS

	Area covered by OGS report and/or map
·····	Roadside geology described in OGS publication
P	Preliminary Map
S	Surficial Map
2275	Coloured Geological Map
OFR	Open File Report
GR / Report	Geoscience Report or Geological Report
Vol.	Annual Report
GC	Geological Circular
IMR	Industrial Mineral Report
MP	Miscellaneous Paper

Available from:
Map Unit, Public Service Centre
Ontario Ministry of Natural Resources
Whitney Block, Queen's Park
Toronto, Ontario M7A 1W3

	Area covered by GSC report and/or map
M	Memoir
B	Bulletin
72–48	GSC Paper
1132–A	GSC Map
*	Out of print
17	Provincial Highway

Available from:
Publications Office
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario K1A 0E8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Ridgetown
LAKE
ERIE
CANADA
U.S.A.
Windsor
P.
749
Essex
P.750
Pelee
Island
0 25 50 Miles
0 40 80 Kilometres

1.1.4 Ontario Engineering Geology Terrain Study (NOEGTS/SOEGTS)

Agency: Ontario Ministry of Natural Resources, 1981.

Map Scale: 1:100 000

Coverage: Most of Ontario between Latitudes 45°N and 51°N. See p.8.

Attributes: The delineated map units are described according to landform (mode of deposition), nature of soil material, topography and drainage.

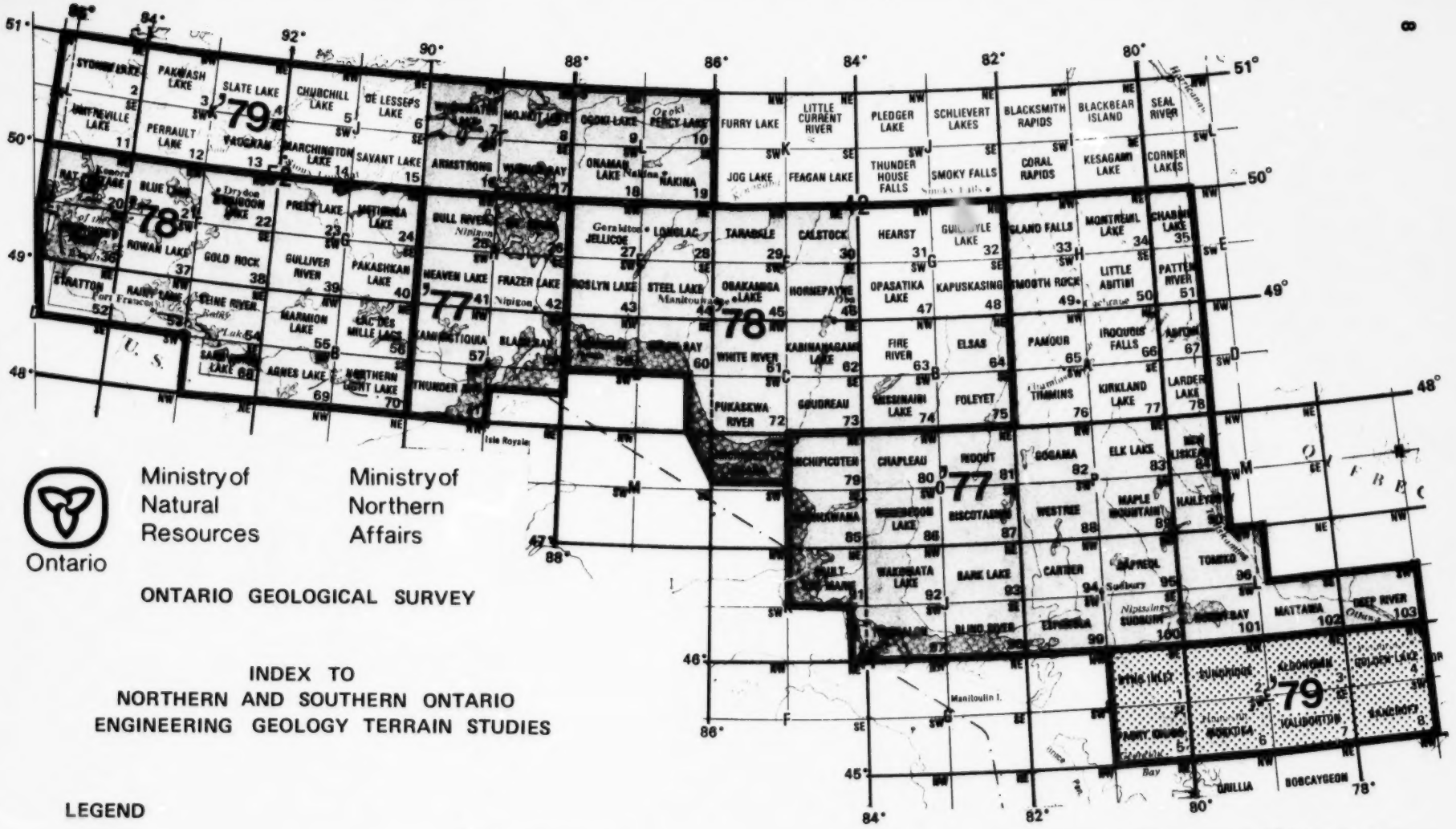
Methodology/Reliability: The mapping is based on airphoto interpretation with only a very modest amount of ground checking. Nevertheless, the survey demonstrates a high degree of reliability.

Uses/Limitations: The classification used in describing the map units was designed for engineering purposes and is therefore useful in such aspects of forestry operations. Further use of the survey can be made,after suitable checking of local field conditions, through the interpretation for silvicultural purposes of the information on soil, topography and drainage given for each map unit. The nature of the terrain classification and the intermediate scale of the survey restrict its use to general operational planning. It can serve as a very useful framework within which to conduct further field work leading to a fuller description of the soil/site conditions of a management unit. For example, this survey formed the basis for the reconnaissance soil survey of the Chapleau-Foleyet area (see 1.3.2).

Products/Sources:

Gartner, J.F., J.D. Mollard and M.A. Roed. 1981. Ontario engineering geology terrain study users' manual. Ont. Geological Survey, Ont. Ministry of Natural Resources, Toronto.

Sources: J, N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ONTARIO GEOLOGICAL SURVEY
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ENGINEERING GEOLOGY TERRAIN STUDIES
LEGEND
'77
Year mapping completed
ELSAS
Study number and area
Areas for which Studies (including maps) have been published
Areas for which maps only have been published
Areas for which maps only have been released as Open File Reports.
ALL MAPS ARE AT A SCALE OF 1: 100,000
SEE REVERSE FOR DETAILS OF PUBLISHED MAPS AND REPORTS
For areas north of 46° N Latitude, the project was funded by the Ontario Ministry of Northern Affairs. For areas south of 46° N Latitude, funding was provided by the Ontario Ministry of Natural Resources. Both projects were managed by the Ontario Ministry of Natural Resources.
Status as of May, 1983

1.1.5 Ontario Peatland Inventory (See also p. 11)

Agency: Ontario Ministry of Natural Resources, ongoing.

Map Scale: Index Map = 1:250 000 and 1:100 000 (shows all peatland study sites and other major peatlands).
Base Map = 1:10 000 (one base map for each study site).

Coverage: All of Ontario (anticipated). See p.10.

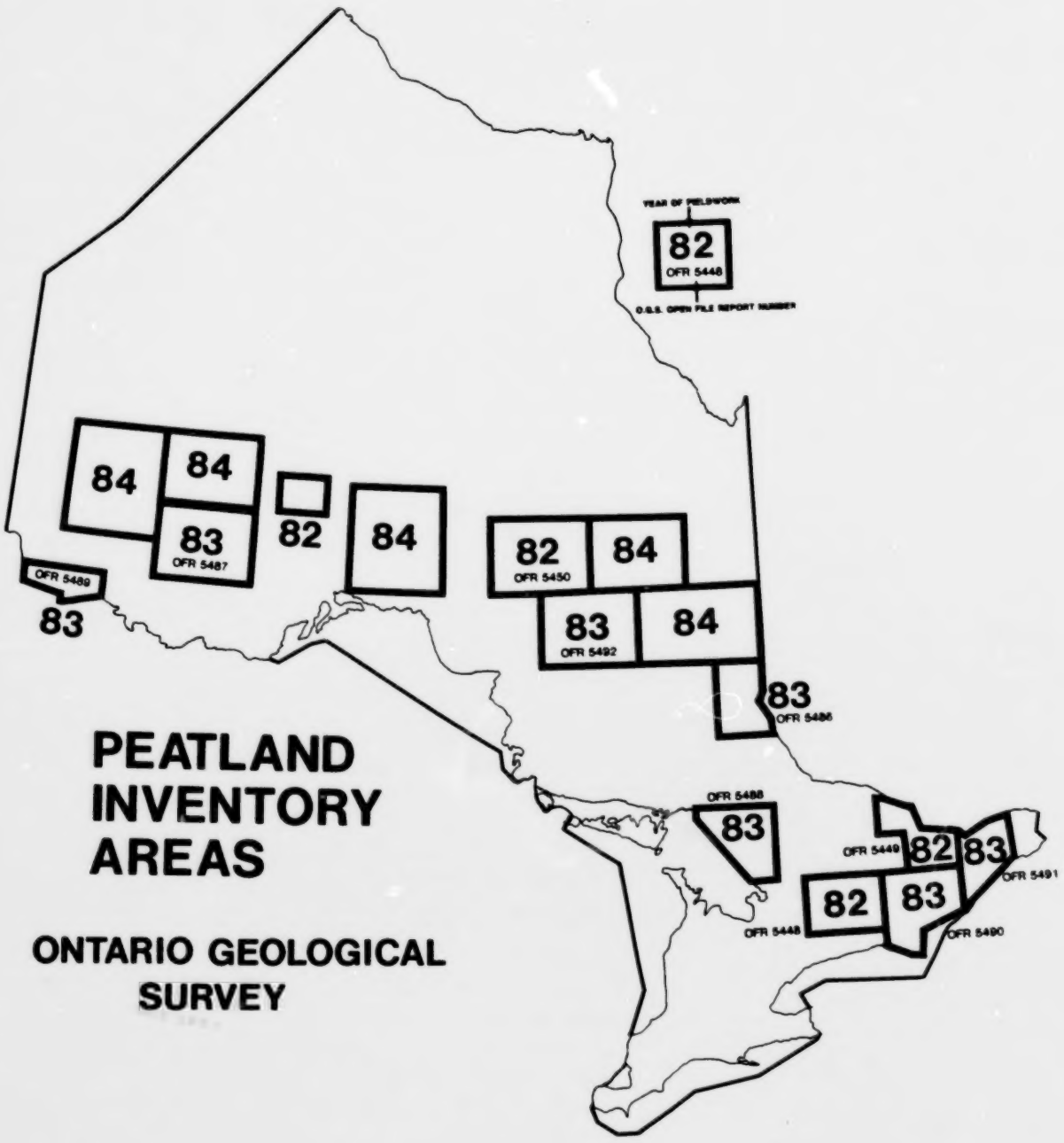
Attributes: Areas having >40 cm depth of organic material are called peatlands. Peatlands are classified on a physiognomic basis. Study sites are surveyed and described with regard to peat depth, peat characteristics (physical and chemical), depth to water, vegetation, tree cover.

Methodology/Reliability: Peatlands >100 ha are identified on satellite imagery. Candidate sites are selected for detailed ground study which is highly intensive with regular transects and sampling. The computer-assisted classification of pixels on the satellite imagery provides reliable maps for the inventory. The ground study is highly detailed and reliable on the chosen study sites and these results can be extrapolated confidently to the non-sampled inventory sites in the adjacent areas as far as the nature of the peatlands is concerned.

Uses/Limitations: The inventory could provide foresters with data concerning the number, extent and nature of forested peatlands in a management unit. Already data on the number of extent of peatlands can be interpreted from the Forest Resources Inventory, but the Ontario Peatland Inventory could supplement these, especially regarding the nature of the peatlands, for broad planning purposes. The detailed peat data could be useful if a study site is to be considered for drainage and intensified forest management.

Products/Sources: Maps and open file reports in library.

Source: J



PEATLAND INVENTORY AREAS

ONTARIO GEOLOGICAL SURVEY

1.1.6 Peatland Inventory, Northeastern Region. (See also p. 9)

Agency: Ontario Ministry of Natural Resources, 1982

Map Scale: Index Map = 1:500 000 (shows locations of peatlands >40 ha within Northeastern Region).
Base Map = 1:15 840 (one base map for each study site).
Galbraith Bog Map = 1:400

Coverage: Original regional project was to survey peatlands throughout Northeastern Region, OMNR. The program was terminated when the Ontario Peatland Inventory was established. See products listed below.

Attributes: For the surveyed peatlands, information is provided regarding the depth and nature of the peat and the topography of the peat surface.

Methodology/Reliability: Peatlands >40 ha were identified from airphoto interpretation and existing soil maps. Candidate sites were selected for detailed ground survey. The ground sampling was conducted on a systematic grid across the study sites. Grid intervals were 200 m or 100 m. The study sites are described with a high level of detail and reliability.

Uses/Limitations: The region-wide inventory provides foresters with data concerning the number, extent and nature of peatlands in each management unit, supplementing information already available from the Forest Resources Inventory. The detailed peat data could be useful if a study site is to be considered for drainage and intensified forest management. Only a very small area of the region is covered by detailed study sites.

Products/Sources: Index Map and file reports:

Forest Resources, Northeastern Region. 1981. Peatland Inventory 1981; Northeastern Region Summary, Volumes 1 and 2.
Blissett, S. and M. Rose. 1982a. Peatland Inventory 1982; Northeastern Region Summary.
_____. 1982b. Peatland Inventory for Bastedo Township.
_____. 1982c. Peatland Inventory for Cherriman Township.
_____. 1982d. Peatland Inventory for Gibbons Township.
_____. 1982e. Peatland Inventory for Mattawan Township.
Carpenter, C. and B. Nicholson. 1982. Forested Peatlands; Abitibi Management Unit.

Source: G

1.2 LAND INVENTORY

Four extensive surveys are listed in this subsection, the Canada Land Inventory (CLI), the Ontario Land Inventory (OLI), a forest site survey conducted throughout Site Regions 5S and 4S in Northwestern Region, OMNR, and the landtype pattern mapping, mainly in parts of Algonquin and Eastern Regions.

One common goal of these inventories is to delineate areas of land that are characterized by a particular range of terrain conditions having a particular potential for growing forests.

The CLI maps are interpretive only, i.e. they do not contain a description of the land, but instead give ratings of the capabilities of the land within each map unit to produce specific crops or support specific uses. However, along with the capability ratings, for agriculture and forestry, a subclass is also given which indicates the environmental (land) limitations to growth within each map unit, e.g. M specifies soil moisture deficiency as the limitation. The uses covered by CLI interpretations are agriculture, forestry, recreation and wildlife (waterfowl and ungulates).

The OLI and the 5S4S surveys provide land classification maps. The 5S4S survey also evaluates the timber use capability of the map units. The OLI provides interpretive maps for timber use capability and also wildlife use capability and recreational use capability.

In this subsection, only the forestry (timber) use capability (and not the other use capabilities) is discussed.

1.2.1 Canada Land Inventory (CLI)

Agency: Canada Department of Regional Economic Expansion, 1971.

Map Scale: 1:250 000

Coverage: Approximately one-third of Ontario, as follows:-
All of Ontario within National Topographic Series Map Grid 30, 31 and 40, plus map sheets 41-A, 41-G, 41H, 41-I, 41-J/K, 42-A, 42-G, 42-H, 52-A, 52-C/D, 52-E, 52-F, 52-L.

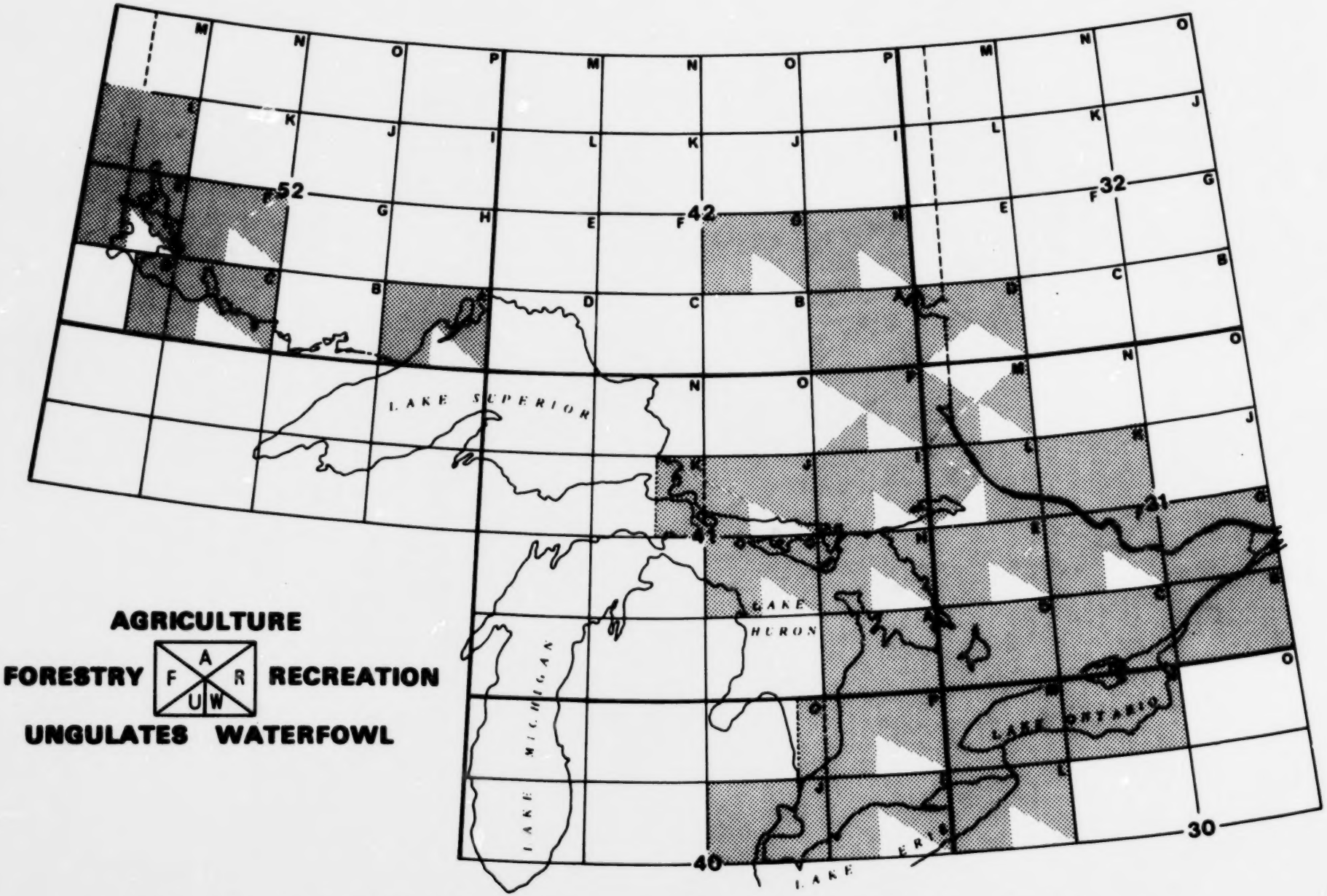
Attributes: Maps of Land Capability for Forestry show areal units rated on a seven-class scale of capability, with a subclass letter indicating the environmental limitation to tree growth. The tree species that can be expected to yield the volume of timber associated with the capability class are given below the rating. Because many of the map units at this scale are mosaics of different site conditions, the symbol may include up to three ratings. In these cases a superscript number after each rating gives the proportion of each class within the map unit, by 10% classes.

Methodology/Reliability: The mapping is based on airphoto interpretation with ground checking along access routes. The ratings are based on concensus value judgements of the productivity of specific combinations of soil features and climate. Reliability of mapping varies from area to area, but is acceptable for the purpose of the inventory.

Uses/Limitations: The survey provides a broad, first approximation inventory of forest productivity for general land use planning purposes. The lack of information on the physical characteristics of the land limits its use for more detailed management considerations.

Products/Sources: Maps and user information (see also p.40, 1.4.6.5 and 1.4.6.6).

Source: F



Index for all 1:250,000 C.L.I. maps (current to March, 1979)

1.2.2 Ontario Land Inventory (OLI)

Agency: Ontario Ministry of Natural Resources, 1977.

Map Scale: 1:250 000

Coverage: All of the productive forest land of Ontario. More specifically, all of Ontario south of Latitude 50°N - east of Longitude 86°W, plus all of Ontario south of Latitude 51°N between Longitudes 86°W and 88°W, plus all of Ontario south of Latitude 52°N - west of Longitude 88°W.

Attributes:

1/ Land Classification maps (1:250 000) show land units described in terms of topography and the depth and texture of soil material. Each land unit is given a unique inventory number. Further information is given in a Land Unit Component Description Book (available on file at Source I) regarding the soil texture, mineralogy, depth and moisture regime of the various smaller components within each land unit. The total area of the land unit and the fraction occupied by each component are also given. No information is given regarding the distribution pattern of the components within the land unit.

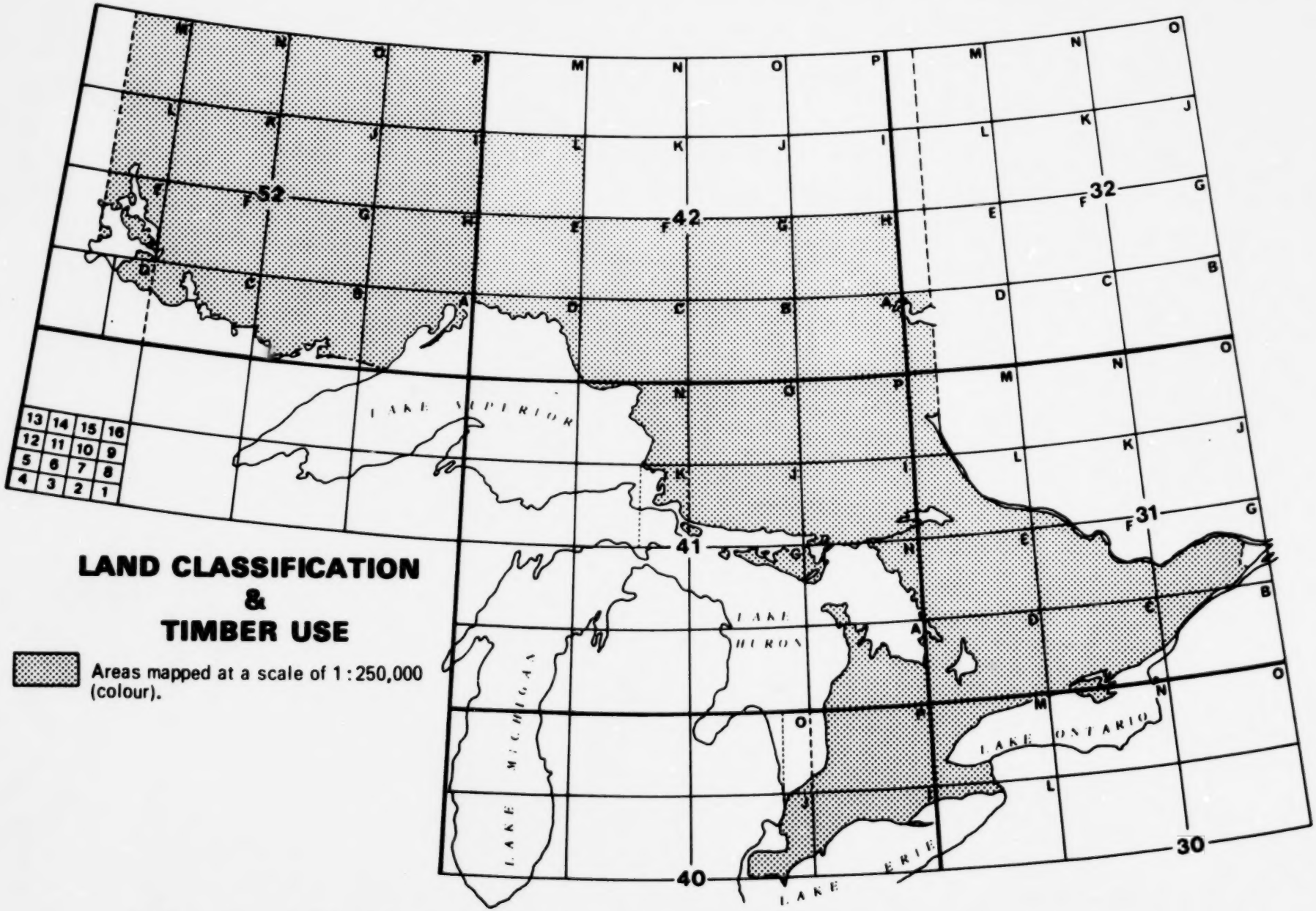
2/ Timber Use Capability maps (1:250 000) show the above land unit boundaries with an evaluation of each unit's inherent ability to grow wood. The evaluation is a relative ranking within a seven-class scale for that site region. A table allows the regional ranking to be placed within a provincial ranking. Because the map units at this scale are usually mosaics of different site conditions, a more detailed three-part capability rating is also provided. These three-part ratings are based on the capabilities of the land conditions typical of 50%, a further 30% and the remaining 20% of the map unit. In the Land Unit Component Description Book (see Land Classification discussion above) the Timber Use Capability of each component is given.

Methodology/Reliability: The mapping is based on airphoto interpretation with ground checking on all access routes. The ratings are based on concensus value judgements of the relative productivity of specific combinations of soil features and climate. Reliability of mapping varies from area to area, but is acceptable for the purpose of the inventory.

Uses/Limitations: The survey provides a broad inventory of terrain conditions and their use capabilities throughout the major part of Ontario for broad levels of resource planning. It can contribute useful information for developing regional forestry strategies and provides local management foresters with an overview of land conditions in their management units. A more detailed use in forest operations planning is limited by the small scale and the rather large map units.

Products/Sources: Maps and Land Unit Component Description Book.

Source: I



O.L.I. Land Classification and Timber Use Capability index map.

1.2.3 Forest Sites of Site Regions 5S and 4S, Northwestern Ontario

Agency: Ontario Ministry of Natural Resources, 1974.

Map Scale: 1:250 000

Coverage: All of Site Regions 5S and 4S.

Attributes: The maps delineate broad units of the landscape which are further subdivided into land units according to the distribution pattern of soil and topography. Every landscape unit is given an inventory name and its general description is given in an accompanying report. Similarly, every land unit is given an inventory number and its description is given in the report, in terms of geomorphology and soil material distribution. Typical landscape cross section diagrams are given for groupings of similar land units. Further, the timber use capability is rated for every land unit, using a three-part symbol (for 50%, 30%, 20% of the land unit area) and a seven-class scale. Also in the accompanying report are given more detailed cross-section diagrams showing the typical distribution of physiographic site types (based on soil material, depth and moisture regime), their specific timber use capability and the type of stable forest cover associated with them.

Methodology/Reliability: The mapping is based on airphoto interpretation with ground checking along all access routes. Much survey field work went into developing the detailed knowledge of soil/landscape/forest relationships which serves as the basis for the report. The reliability is good for this level of mapping.

Uses/Limitations: Although the scale of map is the same as that of OLI and the land unit boundaries coincide, this survey provides more information than does OLI about soil conditions. It therefore can be used for regional planning and the development of forestry strategies as can OLI, but it will also provide a somewhat better overview of terrain within the management units covered and of the land/forest relationships. The small scale and broad approach of the survey does limit its use in more detailed forestry considerations.

Products/Sources:

1/ Zoltai, S.C. 1965. Forest sites of site regions 5S and 4S, Northwestern Ontario. Volume I. Research Report No. 65, Ont. Dept. Lands and Forests, Toronto.

2/ _____. 1974. Forest sites of site regions 5S and 4S, Northwestern Ontario. Volume II. Research Report No. 95, Ont. Ministry of Natural Resources, Toronto.

Source: N, M

1.2.4 Landtype Pattern Mapping

Agency: Ontario Ministry of Natural Resources, 1972

Map Scale: 1:125 000

Coverage: Ontario between Longitudes 76°W and 79°W and between Latitudes 44°30'N and 46°30'N.

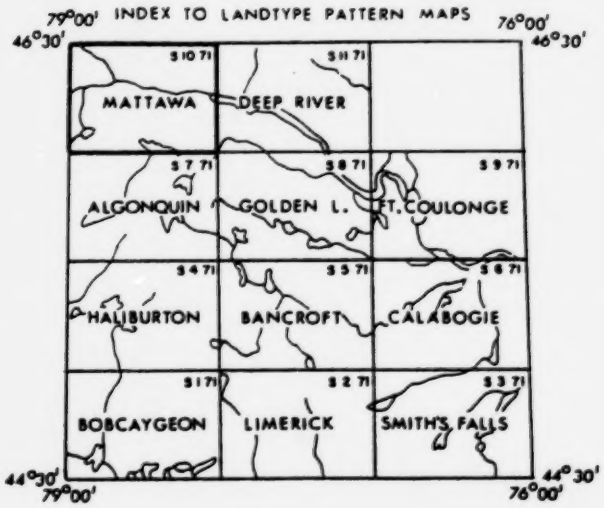
Attributes: Landtypes are defined on the basis of the texture, mineralogy and depth of soil parent material over bedrock. Their geographic distribution is mapped in the survey area. The map legend includes a chart showing the typical pattern of soil moisture regime within each landtype.

Methodology/Reliability: The map is based on air photo interpretation with ground checking along all roads. The map is reliable within the limits of the survey design.

Uses/Limitations: The maps provide a useful overview of the land conditions throughout the area, and can be used in developing a general forest strategy. The legend allows for the interpretation of more detailed soil information than is actually given in the map unit symbol, although the rather small scale limits its use to a broader planning level.

Products/Source: Map Nos. S 1 71 to S 11 71

Source: M



MATTAWA
S 10 71

1.3 SOIL SURVEY

This category includes the largest scale, most detailed soil surveys. In most of them, map units are described according to relatively narrow classes of a number of soil features.

By far the largest program discussed is the Ontario Soil Survey. This was begun in 1928 and is ongoing to provide a general inventory of the soil resources of the province. Since its beginning, many individual county and area surveys have been completed. They show a progression in methodology, purpose, interpretation and also in quality. Most of Southern Ontario and some areas of Northern Ontario have been surveyed, but the selection of survey area and the degree of detail in the mapping are heavily oriented to the agricultural lands. Various interpretations of the basic soil information may be given in accompanying reports, but there is little forestry use interpretation published therein. However, through a contractual arrangement between OMNR and the Ontario Institute of Pedology (OIP) responsible for the Ontario Soil Survey, work on the interpretation of soils for forestry has been conducted in Central and Southwestern Regions since 1980. Also, recent and ongoing ecological programs conducted by OMNR, OIP and the Canadian Forestry Service in Northern, North Central and Northwestern Regions are demonstrating relationships between soils and forest development which will allow for the interpretation of the Ontario Soil Survey, and any other existing or future soil surveys, during the intensification of forest management planning and silvicultural operations (see subsection 1.4).

The next largest program is the Forest Land Productivity (FLaP) Survey throughout Northeastern Region, OMNR. Basic soil maps plus interpretive maps at various scales are available. The most recent FLaP Survey work looks in more detail at the forest ecosystems of the surveyed areas and is reported in subsection 1.4.

Other soil surveys have been conducted in individual areas specifically for forestry, based on selected soil and site features meaningful to forest development and forestry operations. These cover only a small amount of the productive forest area of Ontario so far. However, some future forest soil surveys have been proposed already. These include a substantial inventory of prime sites in Northern Region (see p. 30).

1.3.1 Ontario Soil Survey

Agency: Ontario Institute of Pedology (comprising Agriculture Canada, Ont. Ministry of Agriculture and Food, and University of Guelph staff).

Map Scale: Various, from 1:250 000 to 1:20 000

Coverage: Much of Southern Ontario and Northeastern Ontario south of Latitude 50°N east of Longitude 84°W, plus selected areas in North Central and Northwestern Ontario (see index map, p. 23-4)

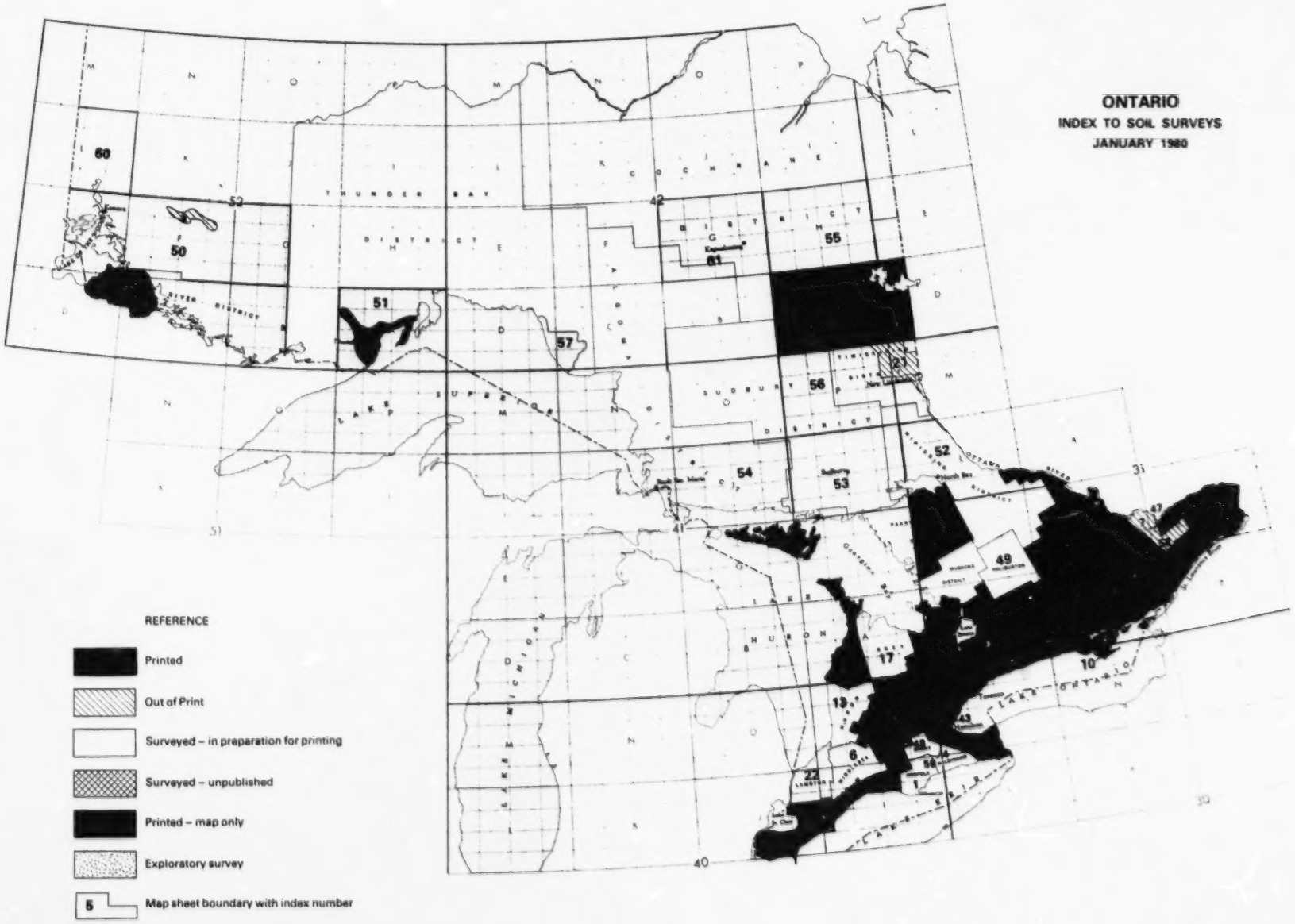
Attributes: The criteria used in the soil classification on which most of the surveys are based include texture and mineralogy of the soil parent material, soil horizon development and drainage. At the most detailed (type and phase) levels, surface soil texture, surface stoniness and topography may also be differentiating criteria.

Methodology/Reliability: In the more settled areas with good access a great deal of ground control is developed. In fact, the map legend is not finalized and the map units are not classified until much ground checking has been completed. However, in many of the surveys the level of detail involved in mapping the soils of the non-agricultural land is much lower than in the cleared areas. Consequently, many of the maps covering cleared and forested land essentially represent two different survey intensity levels, despite the (apparent) one scale of mapping. The soil mapping in the Clay Belt, Northern Region, relied heavily on airphoto interpretation for the forested areas, but it does provide a reasonably detailed level of mapping. While the symbol describing the soil characteristics within the map units is not always entirely accurate, due to lack of ground control, the unit boundaries do generally indicate an appropriate change of soil condition.

Uses/Limitations: In theory, maps at these scales can be highly useful in operations planning. As discussed above, however, the forested areas often contain less detail on the map than the scale warrants. Conversely, the criteria used in classifying the soil units may result in too fine a level of subdivision of soils for forestry purposes. Therefore groupings of similar soil classes sometimes provide a more useful classification scheme for forestry. The current soil interpretation programs and ecological studies in Ontario are contributing to such groupings and are also leading to the evaluation of on-site soil conditions, irrespective of the soil unit in the map legend to which those conditions would be allocated. The detailed soil classification on which these surveys are based does, however, provide the user with much of the information needed to understand the on-site mineral soil condition in terms meaningful for forestry use. The lack of information about the nature and thickness of the organic layers on top of the mineral soils is a shortcoming in forestry applications, although with some local ground checking a model can be developed to overcome this.

Products/Sources: Maps and accompanying reports (see p. 23-4).

Sources: C, L



Cartography by the Land Resource Research Institute, Research Branch, Agriculture Canada, 1974. Reprinted 1980

ONTARIO

REPORT NO.	AREA	SCALE	PUBLISHED
1	Norfolk	1:126,720	1928
2	Elgin	1:126,720	1929, 1979
3	Kent	1:126,720	1930, 1979
4	Haldimand	1:63,360	1935
5	Welland	1:126,720	1935, 1979
6	Middlesex	1:126,720	1931
6*	Middlesex (3 Sheets)	1:50,000	
7	Carleton	1:126,720	1944
8	Parts of Northwestern Ontario	1:126,720	1944
9	Durham	1:126,720	1946, 1979
10*	Prince Edward	1:63,360	1948, 1979
11*	Essex	1:63,360	1949, 1979
12	Grenville	1:63,360	1949
13*	Huron	1:63,360	1952, 1979
14	Dundas	1:63,360	1952
15	Perth	1:63,360	1979
16*	Bruce	1:63,360	1954
17*	Grey	1:63,360	1954
18*	Peel	1:63,360	1953, 1979
19	York (Municipality of York)	1:63,360	1955, 1979
20	Stormont	1:63,360	1954
21	New Liskeard-Englehart Area	1:63,360	1955
22*	Lambton	1:63,360	1957
23	Ontario (Municipality of Durham)	1:63,360	1956, 1979
24	Glengarry	1:63,360	1957, 1979
25	Victoria	1:63,360	1957
26	Manitoulin	1:63,360	1959
27	Hastings	1:63,360	1962
28	Oxford	1:63,360	1961
29*	Simcoe	1:63,360	1962, 1979
30	Soil Associations of Southern Ontario	1:63,360	1960
31	Part of the Parry Sound District	1:126,720	1962
32	Wentworth	1:63,360	1965
33	Prescott and Russell	1:63,360	1962
34	Lincoln	1:63,360	1963
35	Wellington	1:63,360	1962
36	Lennox and Addington	1:63,360	1961
37	Renfrew	1:63,360	1963
38	Dufferin	1:63,360	1963
39	Frontenac	1:63,360	1963
40	Lanark	1:63,360	1967
41	Leeds	1:63,360	1968
42	Northumberland	1:63,360	1976
43	Halton	1:63,360	1971
44	Waterloo	1:20,000	1971
45	Peterborough	1:63,360	1979
46	Timmins-Norands Rouyn	1:50,000 1:250,000	1979
47	Gloucester-Nepean	1:25,000	1977

INDEX NO.**	AREA	SCALE	PUBLISHED
48	Brant	1:25,000	
49	Haliburton		
50	Ft. Frances-Dryden-Kenora Region	1:50,000 1:250,000	
51	Thunder Bay Region	1:50,000 1:250,000	
52	North Bay Region	1:50,000 1:250,000	
53	Sudbury	1:50,000 1:250,000	
54	Sault Ste. Marie-Blind River	1:50,000 1:250,000	
55	Cochrane	1:50,000 1:250,000	
56	Gogama	1:50,000 1:250,000	
57	Pukaskwa	1:100,000	
58	Ottawa-Carleton	1:50,000	
59	Haldimand-Norfolk (Regional municipality)	1:25,000	
60	Pointe du Bois	1:250,000 1:50,000	
61	Kapuskasing	1:250,000	

*These maps are currently being redrawn

**Report number not available

PUBLICATIONS AVAILABLE FROM:

Information Branch
Ontario Ministry of Agriculture and Food
Parliament Bldgs.
Toronto, Ontario
M7A 1A4

1.3.2 Reconnaissance Soil Survey of the Chapleau-Foleyet Area

Agency: Ontario Ministry of Natural Resources and Agriculture Canada, 1984

Map Scale: 1:250 000

Coverage: Chapleau 41-0 and Foleyet 42-B map sheets

Attributes: Map unit boundaries correspond with the terrain units mapped by the Northern Ontario Engineering Geology Terrain Study (see p. 7). Twenty-three soil classification units, used to describe soil conditions within the map units, are based on soil texture, reaction, calcareousness and drainage, and on topography and amount of exposed bedrock. Further information on mode of deposition, surface stoniness and soil profile taxonomy is given.

Methodology/Reliability: The NOEGTS map unit boundaries were checked and accepted, then a systematic sampling grid was superimposed. Actual field sampling was restricted to all those grid points adjacent to the road system, totalling 436 sites. The characteristic soil conditions of each type of terrain unit were elucidated and this model was applied to the total map area. Reliability is commensurate with intensity of roads and sampling.

Uses/Limitations: Because this survey goes one step further in land description than do the OLI and NOEGTS surveys, it provides a better base for regional planning and the development of forestry strategies, and for a general orientation to soil conditions within the area covered. The scale is, however, too small for more detailed use in forest operations.

Products/Sources: Maps and report.

Evans, L.J. and B. Cameron. 1984. Reconnaissance soil survey of the Chapleau-Foleyet area, Northern Ontario. Agriculture Canada. Ont. Ministry of Natural Resources.

Source: L, P

1.3.3 Forest Land Productivity (FLaP) Survey, Northeastern Region, OMNR. (See also p. 36 and 39)

Agency: Ontario Ministry of Natural Resources, ongoing.

Map Scale: 1:500 000, 1:250 000, 1:100 000, 1:50 000, 1:15 840

Coverage: 1/ All of Northeastern Region, OMNR, at all scales except 1:15 840.
2/ At 1:15 840, Crown lands only in the following townships:

Baldwin	Deagle	Gough	May	Salter
Boon	Foster	Hallam	McKinnon	Shakespeare
Cadeau	Gaiashk	Harrow	Mongowin	Shedden
Curtin	Gerow	Lehman	Nairn	Tennyson

Attributes: The basic soil mapping was done at 1:50 000 (FLaPS SOILMAPS) and describes the map units in terms of mode of deposition of soil parent material, soil texture, stoniness, lime content, depth and moisture regime, topography and bedrock exposure. The more detailed mapping (1:15 840 SOILMAPS) in Espanola District describes map units in terms of soil texture, stoniness, depth and moisture regime, bedrock exposure and the slope, position on slope and dominant aspect of the unit. The 1:100 000 PRODMAPS are interpretive, based on the 1:50 000 SOILMAPS, and show site productivity represented by indicator tree species and appropriate site class. The FOMAPS at 1:250 000 and 1:500 000 scale are forest management potential maps rating all SOILMAP units in terms of their productivity and degree of limitations for forest management.

Methodology/Reliability: SOILMAPS are based on airphoto interpretation with at least three ground inspection checks per map unit over more than 70% of the region. They contain reliable descriptions of the map units for the scale and type of survey. All map units are listed on computer disc files. Digitizing of unit boundaries is proposed. Productivity interpretations are based on site-related local growth and yield tables being developed from stem analysis of 9 commercial tree species. Forest management interpretations are based on the productivity ratings and on an Operability Index which evaluates how the soil/site features govern the use of mechanical equipment and the development of competing vegetation. The Operability Index is subjectively developed from the evaluaters' experiences.

Uses/Limitations: The FLaP survey is designed to provide an inventory showing the spatial distribution of specific soil/ecosystem conditions throughout the region, and to supply information for the interpretation of these conditions in terms of potential productivity and operability.
The various products can be used at all levels of forest management, from broad regional planning to individual stand/site treatments, although so far only a small part of the region is covered by the most detailed survey information needed for individual stand considerations.

Products/Sources: SOILMAPS - 1:50 000, 1:15 840; PRODMAPS - 1:100 000
FOMAPS - 1:500 000, 1:250 000

Source: G

1.3.4 The Land Resources of the Sudbury Basin

Agency: Ontario Department of Lands and Forests, 1963

Map Scale: 1:80 000 approximately

Coverage: Sudbury Basin, Northeastern Region, OMNR.

Attributes: Map units are described in terms of the texture, mineralogy and depth over bedrock of the soil parent material and the soil moisture regime. In an accompanying report, the agricultural use capability and the timber use capability of each map unit are rated, while more detailed potential timber production ratings for up to 15 tree species are given for specific soil/site conditions. All ratings are subjective value judgments based on general observations of forest production on similar soil/site conditions throughout Site Region 5E.

Methodology/Reliability: The mapping is based on airphoto interpretation with ground checking along all roads. The map is reliable within the limits of the survey design.

Uses/Limitations: The survey provides an overview of the soil conditions throughout the Sudbury Basin, suitable for use in broader planning activities. The normal limitations of scale and type of survey apply.

Products/Sources: Map and report

Pierpoint, G. and G.A. Hills. 1963. The land resources of the Sudbury Basin, Research Report 50, Department of Lands and Forests, Toronto.

Source: M

1.3.5 Englehart Management Unit Soil Survey

Agency: Ontario Ministry of Natural Resources, 1971.

Map Scale: 1:50 000 (composite map), 1:15 840 (13 sheets)

Coverage: 13 townships constituting the Englehart Management Unit, Kirkland Lake District, OMNR.

Attributes: Map units are described in terms of soil texture, drainage and topography, with further discussion presented in an accompanying report.

Methodology/Reliability: The survey was based on airphoto interpretation with ground checking along access routes and some transects. The proportions of the dominant and, in more complex areas, the secondary soil deposits within each map unit were determined. For each of these deposits, the topography was described and the proportions of the major drainage classes were determined. The reliability is standard for the type and scale of survey.

Uses/Limitations: Currently, the survey is being used successfully in the 2nd component of the Northern Region Prime Sites inventory to provide an overall picture of the soils of the management unit and to indicate candidate areas for further survey and intensification of management. Overambitious local attempts at using the survey to indicate precisely the soil conditions coinciding with individual forest stands within parts of a map unit have not always been successful, but this reflects a lack of understanding of the nature and scale of this and other similar surveys.

Products/Sources: A single copy of each map and legend is available in the Timber Section, Kirkland Lake District, OMNR.
A Mylar (1:50 000) for the composite map is also available.

Source: P

1.3.6 Local Forest Soil Surveys, Northern Ontario

Agency: 1/ Ontario Ministry of Natural Resources, 1983
2/ Abitibi-Price Inc., 1984

Map Scale: 1:15 840

Coverage: 1/ Cochrane District, OMNR,
Bragg, Hurtubise, Kenning, Potter and Tweed Townships and lands south of Berry Township.
Hearst District, OMNR,
Parts of Arnott, Auden, Elgie, Fintry, Frost, Gill, McEwing, McMillan, Mulloy and Newlands Townships.
2/ Thunder Bay District, OMNR,
Five local areas in the Spruce River Forest (90 km^2 approx.).

Attributes: The map units are described on the basis of soil texture, calcareousness, stoniness, depth to bedrock, moisture regime and drainage, thickness and nature of surface organic layer and topography. A report accompanies each survey.

Methodology/Reliability: Mapping is based on airphoto interpretation, with ground checking limited to an average of two to three check points/km^2, not uniformly distributed over the area. This survey intensity level gives reliability equivalent to a smaller scale survey (1:50 000 to 1:100 000) rather than reliability generally associated wtih a 1:15 840 scale survey.

Uses/Limitations: The surveys are based on soil attributes of direct significance in forestry operations. They can be used in developing management strategies for the surveyed areas and in planning forestry operations and silvicultural treatments to the detailed stand level. Users are advised to check map designations on the ground whenever possible if the surveys are used for final allocation of silvicultural treatment on an individual stand basis. Hearst District forestry staff have developed a method to determine silvicultural prescriptions, using the soil survey data, Forest Resources inventory data, topographic information and local forestry knowledge.

Products/Sources:

1/ Map and report "Cochrane forest soil survey"
Map and report "Soil survey of the Hearst area, Northern Ontario"
Source: H, P

2/ Map and report "Soil survey of parts of the Spruce River F.M.A. area"
Source: A

1.3.7 Northern Region Prime Site Inventory

Agency: Ontario Ministry of Natural Resources, ongoing

Map Scale: 1:250 000 and 1:50 000

Coverage: Northern Region, OMNR.

Attributes: To be determined.

Methodology/Reliability: Existing land/soil inventories will be used to select candidate areas for further, more detailed soil inventory. These survey areas will be selected on criteria relevant to their primeness for intensified forest management. The criteria include soil features controlling inherent site productivity. A key to soil productivity, based on soil texture, stoniness, depth to bedrock, depth to mottled zone (indicating drainage and moisture regime), depth of surface organic matter and exposed bedrock has been developed. This is being applied to existing soil survey data to rank map units according to productive capability. The key is based on subjective value judgment reached by concensus among experienced foresters and ecologists. Results obtained depend also on the reliability of the existing soil survey data, which varies across the region.

Uses/Limitations: Component 2 of the program, wherein the productivity ratings will be allocated to all map units, will provide a basis for developing a broad forestry strategy. However, there are some areas of the region for which soil survey data are scant or absent. The final proposed Component 3 could provide soil information in sufficient detail for planning and allocating specific silvicultural operations, if sufficient knowledge is available concerning forest response to specific soil conditions. Knowledge of this sort is available from the forest ecosystem studies in the Clay Belt portion of Northern Region (see p. 38), but the extending of these studies to the rest of Northern Region has not yet been undertaken.

Products/Sources:

Report "User's guide to the soil productivity key"
Source: H

1.3.8 Fast Growing Hardwoods Intensive Soil Survey

Agency: Ontario Ministry of Natural Resources, ongoing

Map Scale: 1:4000

Coverage: 4233 ha to date, comprising 266 individual properties within 63 townships, mainly in Eastern Region plus also Algonquin, Central, Northern, Northwestern and Southwestern Regions.

Attributes: Map units are described on the basis of soil texture and drainage. The ground survey describes sample soil pits by horizon in greater detail.

Methodology/Reliability: Soils are inspected systematically along transects laid out at approximately 40 m intervals across the property, by auger or spade. Appropriate soil pit descriptions are made to augment the transect data. Soil unit boundaries are drawn initially at 1:2000, with final map drafting done at 1:4000. This is a highly detailed inspection level producing reliable map unit boundaries and descriptions.

Uses/Limitations: This survey is used for the most detailed allocation of plant material and silvicultural treatments within areas already selected for the production of fast growing hardwoods.

Products/Sources: Map and report for each surveyed property.

Source: D

1.4 FOREST ECOSYSTEM SURVEYS

The surveys discussed in this subsection all consider the forest vegetation in some detail as well as the soil/site conditions in which it grows. Several of the surveys provide an inventory map of specified soil/site conditions, with description and interpretation of the typical forest ecosystems that occur. One survey also gives a forest component inventory map.

The remaining surveys do not provide any inventory or map. Their purpose is to generate an understanding of how the various forests in the study area develop, both qualitatively and quantitatively, in relation to the soil/site features of the basic land resource. Such knowledge is necessary for the interpretation of any soil survey information for forestry purposes. In fact, it is preferable that such knowledge be available before the actual design of the soil survey, particularly as it determines the choice of features to be surveyed and the class boundaries to be used for their description.

1.4.1 The Sites of the Kirkwood Management Unit

Agency: Ontario Department of Lands and Forests, 1962.

Map Scale: 1:63 360

Coverage: Seventeen townships constituting the Kirkwood Management Unit, plus Plummer Additional Township, Northeastern Region, OMNR.

Attributes: The map units are differentiated on the basis of the texture and mineralogy of soil parent material, soil depth and moisture regime. An accompanying report gives descriptive information about the soil deposits and about the combinations of forest type and soil/site type that occur in the area. Natural vegetation succession trends and potential forest production ratings are given for the specific soil conditions.

Methodology/Reliability: The survey was based on airphoto interpretation with ground checking along all access routes. The descriptions of the map units are reliable for the type and scale of survey. The ecosystem descriptions and ratings are subjective value judgments based on qualitative field observations and may be considered a first approximation only.

Uses/Limitations: The survey provides a reasonably detailed orientation to the sites of the Kirkwood Management Unit. The map can serve as a basis for broader forestry planning. However, the more recent FLaP survey (p. 26) covers this area along with the whole of Northeastern Region, and is now the more logical survey to use. The discussion of the forest-soil interrelationships should still provide a basis for silvicultural considerations on specific soil/site conditions.

Product/Source: Report with map of physiographic site types, Pierpoint, G. 1962. The Sites of the Kirkwood Management Unit. Research Report 47, Ontario Dept. of Lands and Forests, Toronto.

Source: M

1.4.2 Ecological Units of the Greta Lake Road Reference Area, Geraldton District

Agency: Ontario Department of Lands and Forests, 1965.

Map Scale: 1:25 000 approx.

Coverage: Part of Fulford township and the area to the north, as a $\pm$ 3 km wide strip centred on Greta Lake Road, covering approximately 50 km^2.

Attributes: Two separate maps on the same base show the landtype components, based on soil texture, mineralogy, depth and moisture regime and relief, and the forest components, based on cover type, species composition and age. The accompanying report gives descriptive information about the soil deposits and about the combinations of forest type and soil/site type that occur in the area. Relative levels of timber production under different levels of management are rated for specific soil conditions, and silvicultural recommendations are discussed for the various ecosystem types.

Methodology/Reliability: One hundred sample plots located throughout the area were described in detail regarding soil and vegetation. These and other general ground checking provided a basis for airphoto interpretation of the map units and their description, plus the productivity ratings and silvicultural discussion. The survey information shown on the maps is a reliable statement of conditions in 1965. At that time the survey area covered one of the few remaining accessible areas that had not been cut over. The forest may now be changed but the landtype component map should still be valid.

Uses/Limitations: This study typified ecosystem conditions in the "old" forest within the Geraldton Site District, Site Region 3W. The descriptions and management discussions are still of use in general forestry planning and silvicultural decision making, even though technology has developed since the study was completed and a new ecosystem survey is ongoing in the area (p. 38). The landtype component map covers only the relatively small (50 km^2) study area.

Product/Source: Report with maps of landtype components and forest components,
Lynn, R.J. and S.C. Zoltai. 1965
The Greta Lake Road Reference Area, Geraldton Site District, Site Region 3W. Research Report 60, Ontario Dept. of Lands and Forests, Toronto.

Source: M

1.4.3 Forest Land Productivity (FLaP) Survey, Northeastern Region, OMNR. (See also p. 26 and 39)

Agency: Ontario Ministry of Natural Resources, ongoing.

Map Scale: 1:15 840

Coverage: North Bay District: Bastedo, Gibbons, Mattawa and McWilliams Townships.
Sudbury District: Attlee, Cherriman and Waldie Townships.
Wawa District: Acton, Doucette Townships.

Attributes: SOILMAP units are described in terms of soil texture, stoniness, depth and moisture regime, bedrock exposure and the slope, position on slope and dominant aspect of the unit. Soil analytical data, vegetation attributes and site limitations for forest management are reported.

Methodology/Reliability: All mapped units are traversed during ground checking, with three to six sample soil pits described per unit and unit boundaries spot checked by auger sampling. Tree and tall shrub vegetation is documented on a 10 m x 10 m plot and ground vegetation is tallied on five 2 m x 2 m plots per unit. Ecosystem characteristics of concern in forest management (e.g. competing vegetation, anticipated residual vegetation, severe stoniness) are recorded. Soils are described in 1 m deep pits and from 10%-30% are sampled and analyzed in the laboratory.

Uses/Limitations: This work represents a detailed level of soil survey producing reliable results, with allied data on ecosystem conditions. All information is stored on computer disc.

Products/Sources: SOILMAPS 1:15 840 and accompanying reports for each township. plus computer files of all information.

Source: G

1.4.4 Multiple Land-Use Plan for the Glackmeyer Development Area

Agency: Ontario Department of Lands and Forests, 1960

Map Scale: 1:45 000 approx.

Coverage: The Glackmayer Development Area
Cochrane District (approximately 42 500 ha)

Attributes: Map No. 1 shows landforms described by mode of deposition and texture of material. Map No. 2 shows soil/site units described by soil texture, petrography and moisture regime, slope and fabric. In an accompanying report, detailed description and discussion is given regarding soils and the development of associated forest vegetation. Agricultural use capability ratings and forest use capability ratings are given for the various soil/site conditions existing in the survey area, and are shown for the soil units of Map No. 2 on two further interpretive maps. More detailed yield ratings are also given for the soil/site conditions described. Other maps and discussion relate to the land use planning process and the plan itself.

Methodology/Reliability: Mapping is based on air photo interpretation with ground checking along all roads and on some transects. Map unit boundaries and descriptions are reliable for this scale of survey. The ecological discussions in the report are based on many observations of forest conditions in relation to soil/site conditions within the Clay Belt of Northern Region. The use-capability ratings and more detailed yield ratings are subjective value judgments based on many observations throughout Site Region 3E.

Uses/Limitations: The survey material led to the multiple land-use plan contained in the report. The more detailed information is of use in forestry planning and in silvicultural decision making. Some of the terminology used in the descriptive soil/site material requires translating into current soil terminology. The interpretive yield data are not supported by actual measurements, but the value judgments provide a useful ranking for general purposes.

Products/Sources: Hills, G.A. and R. Portelance. 1960. A multiple land-use plan for the Glackmeyer Development Area. Ontario Dept. of Lands and Forests, Toronto.

Source: M

1.4.5 Forest Ecosystem Surveys

Agencies: Ontario Ministry of Natural Resources,
Agriculture Canada,
Canadian Forestry Service.

Coverage: 1/ Clay Belt Site District, Site Region 3E, Northern Region, OMNR, 1985
2/ North Central Region, OMNR, ongoing
3/ Northwestern Region, OMNR, ongoing

The programs discussed here are designed to provide a data base for correlating the soil/site and the vegetation features of the survey area. The data may be analysed in ways that allow for (i) the interpretation of soil survey information for forestry purposes, (ii) the design of future soil surveys, (iii) the multi-dimensional description of soil and vegetation within an ordination framework, (iv) the development or a practical, management-oriented ecological classification of forested land conditions, and (v) the development of efficient, simple procedures for on-site recognition of these various classes. Further, as part of the first survey, methods and aids for remotely sensing and mapping ecosystems have been developed. Through the use of on-site recognition aids and remote sensing procedures, some 80 000 ha of forests in Northern Region, mainly under licence to Abitibi-Price Inc. and Spruce Falls Power and Paper Co., have been inventoried and described by forest ecosystem classes. These include the Wally Creek drainage project in Cochrane District, where ditch spacing is determined by ecosystem class. Forestry staff have established initial interpretations of ecosystem classes for use in making decisions about harvesting and silvicultural activities, and are employing these in management planning and operations.

Products/Sources: 1/ Published reports

Jones, R.K. et al. 1983. Field guide to forest ecosystem classification for the Clay Belt, Site Region 3E. Ontario Ministry of Natural Resources.

Pierpoint, G. et al. 1984. Characteristics and Management Implications of Ecosystems with Boreal Hardwood Components in the Great Clay Belt, Northern Ontario, Canada, in, Stone, E.L. ed. Forest Soils and Treatment Impacts (1984), Proceedings of the Sixth North American Forest Soils Conference, June 1983. The University of Tennessee, Knoxville.

Source: L,P

2/ Progress reports

Source: Q,R

3/ Progress report

Source: P,S

1.4.6 Forest Productivity Surveys

Agency: Ontario Ministry of Natural Resources
Ontario Institute of Pedology, ongoing

Several projects are underway that collect and evaluate forest production data within a soil/site framework. The programs differ somewhat due to varying availability of a soil data base and the requirements of the regions in which the work is being done. The descriptions below are introductory, not exhaustive. Sources for detailed information about each project are given.

1.4.6.1 Northeastern Region FLaP Survey (See p. 26 and 36)

Soil/site related local growth and yield tables based on stem analysis of black spruce, white spruce, jack pine, red pine, white pine, poplar, sugar maple, white birch and yellow birch sample trees are being developed for evaluation of the productivity of specific soil/site conditions throughout the region.

Source: G

1.4.6.2 Survey of Artificially Regenerated Sites, Northern Region

Height growth, stocking and density of spruce and jack pine regeneration is being evaluated in relation to soil/site conditions and regeneration method and treatments.

Source: P

1.4.6.3 Growth and Yield Studies, Northern, North Central and Northeastern Regions

To date, some 250 permanent sample plots have been established within the three regions in spruce plantations, plus other (destructive) sampling for stem analysis, to provide growth and yield information for the "new" forest within a soil/ecosystem framework.

Source: P

1.4.6.4 Deterioration of Overmature Spruce Stands, Northern Region

To date 44 permanent sample plots have been established in the Clay Belt area of Northern Region to provide quantitative data on the rate of volume loss in overmature black spruce stands in relation to soil/ecosystem conditions.

Source: P

1.4.6.5 Growth and Yield of Red Pine Plantations in Southern Ontario

Growth data from some 200 permanent sample plots have been collected for almost 40 years to provide (i) forestry use capability ratings for specific soil/site conditions within the Canada Land Inventory program, and (ii) growth and yield tables. Published reports include

(i) Love, D.V. and J.R.M. Williams. 1968. The economics of plantation forestry in southern Ontario. Report No. 5, Canada Land Inventory, Dept. of Regional Economic Expansion, Ottawa.

(ii) Beckwith, A.F., P. Roebbelen and V.G. Smith. 1983. Red pine plantation growth and yield tables. Forest Research Report 108, Ont. Min. of Natural Resources, Toronto.

Source: F,M,P

1.4.6.6 Growth and Yield of Hardwood Stands in Southern Ontario

Growth data from some 250 permanent sample plots have been collected during the past 15 years or so to provide (i) forestry use capability ratings for specific soil/site conditions within the Canada Land Inventory program, and (ii) variable density growth tables.

Published report:

Love, D.V., A.F. Beckwith and Z.J.R. Morowski. 1972. Studies of land productivity for hardwoods in southern Ontario. Report No. 6, Canada Land Inventory, Dept. of Regional Economic Expansion, Ottawa.

Source: F,M,P

1.4.6.7 Soil Interpretation for Forest Land Management in Southern Ontario

To develop forestry interpretations for specific soil/site conditions in Site Regions 6E and 7E, thereby capitalizing on the extensive Ontario Soil Survey in these areas, over 900 plots have been established in Central and Southwestern Regions, in which tree height, age, diameter and basal area data have been gathered and soil/site features have been described. Data are currently being analysed to provide two types of productivity ratings, (i) height/age indices for each taxonomic soil class ("soil series") by which the Ontario Soil Survey map units are described, and (ii) height/age indices for specific combinations of soil texture and moisture regime. Most of the data relate to Norway spruce, white spruce, red pine, white pine, European larch, sugar maple and ash.

Sources: L,P

2. SUMMARY OF REGIONAL COVERAGE

NORTHWESTERN REGION

1. Surficial Geology			
a. Ont. Dept. Lands & Forests Maps S165 and S265	1:506 880	whole region south of 51°N Latitude	p. 2 source M,O
b. Map & report GSC 63-6	1:506 880	51°N to 53°N Lat. 86°W to 94° Long.	p. 2 source E,J
c. Surficial Geology Mapping for Northern Ontario (OCRS)	1:250 000	whole region north of 51°N except for area immediately N and W of Red Lake	p. 2 source I
d. NOEGTS	1:100 000	whole region south of 51°N Latitude	p. 2 source I
e. Ontario Peatland Inventory	1:250 000 1:10 000	various parts	p. 9,10 source J
2. Land Inventory			
a. CLI	1:250 000	various parts	p. 14,15 source F
b. OLI			
(i) Land Classification	1:250 000	whole region south	p. 16,17
(ii) Timber Use Capability	"	of 52°N	source I,O
c. Forest Sites of Site Regions 5S and 4S	1:250 000	Site Regions 5S and 4S	p. 18 source M,N
3. Soil Survey			
a. Ontario Soil Survey Report #8	1:250 000	Immediate vicinity of Thunder Bay, Dryden and Rainy River	p. 22-24 source C,L
Index #50 and #60	1:50 000	Southern Kenora, Dryden, Ignace and all of Fort Frances districts	p. 22-24 source L
4. Forest Ecosystem Surveys			
a. Initial program		Region wide	p. 38 source P,S

NORTH CENTRAL REGION

1. Surficial Geology

a. Maps S165, S265, S365 Ont. Dept. Lands & Forests	1:506 880	most of region south of 51°N Lat.	p. 2 source M,O
b. Map & report GSC 63-6	1:506 880	51°N to 53°N Lat. 86°W to 94° Long.	p. 2 source E,J
c. Surficial Geology Mapping for Northern Ontario (OCRS)	1:250 000	whole region north of 51°N Latitude	p. 2 source I
d. NOEGTS	1:100 000	whole region south of 51°N Latitude	p. 7,8 source J,O
e. Ontario Peatland Inventory	1:250 000 1:10 000	various parts	p. 9,10 source J

2. Land Inventory

a. CLI	1:250 000	Thunder Bay area	p. 14,15 source F
b. OLI			
(i) Land Classification	1:250 000	whole region south	p. 16,17
(ii) Timber Use Capability	"	of 51°N Latitude	source I,O

3. Soil Survey

a. Ontario Soil Survey Report # 8	1:250 000	Thunder Bay area	p. 22-24 source C,L
Index #51 and #57	1:50 000	Thunder Bay area and Pukaskwa	p. 22-24 source L
b. Spruce River Forest Soil Survey	1:15 840	90 km^2 within Spruce River Forest, Thunder Bay District	p. 29 source A

4. Forest Ecosystem Surveys

a. Greta Lake Road Reference Area	1:25 000 approx.	50 km^2 Fullard Twp. and north	p. 35 source M
b. Forest Ecosystem Classification		Region wide	p. 38 source Q,R
c. Growth and Yield Studies		various parts	p. 39 source P

NORTHERN REGION

1. Surficial Geology

a. Maps S365 and S465 Ont. Dept. Lands & Forests	1:506 880	whole region south of 50°N Latitude	p. 2 source M,O
b. Surficial Geology Mapping for Northern Ontario (OCRS)	1:250 000	whole of region north of 50°N Lat.	p. 2 source I
c. NOEGTS	1:100 000	whole region south of 50°N Latitude	p. 7,8 source J,O

2. Land Inventory

a. CLI		various parts	p. 14,15 source F
b. OLI			
(i) Land Classification	1:250 000	whole region south of 50°N Latitude	p. 16,17 source I,O
(ii) Timber Use Capability	"		

3. Soil Survey

a. Ontario Soil Survey Reports #21,#46,#55, #56,#61	1:250 000 1:50 000	substantial part of region south of 50°N	p. 22-24 source C,L
b. Reconnaissance Soil Survey of Chapleau & Foleyet area	1:250 000	NTS Map Sheets 41 O Chapleau 42 B Foleyet	p. 25 source L,P
c. Soils of the Englehart Man. Unit	1:50 000	Englehart M.U. Kirkland Lake District	p. 28 source P
d. Cochrane Forest Soil Survey	1:15 840	All or part of 6 Twps. east of Cochrane	p. 29 source H,P
e. Soil Survey of the Hearst area	1:15 840	Parts of 10 Twps. west of Hearst	p. 29 source H,P
f. Prime Site Inventory	1:250 000 1:50 000	Region wide	p. 30 source H

4. Forest Ecosystem Surveys

a. Glackmeyer Land Use Plan	1:45 000	42.5 km^2 in Cochrane District	p. 37 source M
b. Forest Ecosystem Classification		Clay Belt	p. 38 source L,P
c. Forest Productivity Surveys		Region wide	p. 38 source P

NORTHEASTERN REGION

1. Surficial Geology

a. Maps S365 and S465	1:506 880	whole region	p. 2 source M,O
b. Physiography/Quaternary Geology	1:253 440 1:50 000	small parts	p. 3,4 source E,J,N
c. NOEGTS	1:100 000	whole region	p. 7,8 source I,O

2. Land Inventory

a. CLI	1:250 000	various parts	p. 14,15 source F
b. OLI (i) Land classification (ii) Timber Use Capability	1:250 000	whole region	p. 16,17 source I,O

3. Soil Survey

a. Ontario Soil Survey Reports #31,#52,#53, #54,#56 and #21)	1:250 000 1:50 000	Much of region	p. 22 source C,L
b. Reconnaissance Soil Survey of Chapleau-Foleyet area	1:250 000	North parts of Blind River and Espanola Districts	p. 25 source L,P
c. FLaP survey	1:50 000 1:15 840	whole region selected Twps.	p. 26 source G
d. Land Resources of the Sudbury Basin	1:80 000	Sudbury basin	p. 27 source M

4. Forest Ecosystem Surveys

a. Sites of Kirkwood Management Unit	1:63 360	Kirkwood M.U.	p. 34 source M
b. FLaP Survey	1:15 840	Nine Twps.	p. 36 source G
c. Forest Productivity Surveys		various parts	p. 39 source P

ALGONQUIN REGION

1. Surficial Geology

a. SOEGTS	1:100 000	Lat. 45°N to 46°N Long. 77°W to 81°W	p. 7,8 source J,O
b. Physiography of Southern Ontario (Map 2228 & NE corner of map 2224)	1:253 440	whole region.	p. 3 source J,O
c. Quaternary Geology of Southern Ontario	1:50 000 1:63 360	scattered areas in region	p. 4 source E,J,N

2. Land Inventory

a. CLI	1:250 000	whole region	p. 14,15 source F
b. OLI (i) Land classification (ii) Timber Use Capability	1:250 000	whole region	p. 16,17 source I,O
c. Landtype Pattern Maps (S 1 71 to S 11 71)	1:125 000	whole region	p. 19 source M

3. Soil Survey

a. Ontario Soil Survey Reports #25,#27,#31, and 37)	1:250 000 1:50 000 1:63 000	limited parts	p. 22-24 source C,L

4. Forest Ecosystem Surveys

a. Forest Productivity Surveys		various plots	p. 39,40 source P

EASTERN REGION

1. Surficial Geology

a. Physiography of Southern Ontario (Maps 2226, 2227, 2228)	1:253 440	whole region	p. 3 source J,O
b. Quaternary Geology of Southern Ontario	1:50 000 1:63 360	most of region	p. 4 source E,J,N

2. Land Inventory

a. CLI	1:250 000	whole region	p. 14,15 source F
b. OLI (i) Land classification (ii) Timber Use Capability	1:250 000	whole region	p. 16,17 source I,O
c. Landtype Pattern Maps	1:125 000	all of region west of Long. 75°W north of Lat. 44°30'N	p. 19 source M

3. Soil Survey

a. Ontario Soil Survey	1:63 360 1:50 000 1:25 000 (1 report only)	whole region	p. 22-24 source C,L
b. Intensive Soil Survey	1:4000	selected properties	p. 31 source D

4. Forest Ecosystem Surveys

a. Forest Productivity Surveys		various plots	p. 39,40 source P

CENTRAL REGION

1. Surficial Geology

a. Physiography of Southern Ontario (Maps 2225, 2226)	1:253 440	whole region	p. 3 source J,O
b. Quaternary Geology of Southern Ontario	1:50 000 1:63 360	most of region	p. 4 source E,J,N

2. Land Inventory

a. CLI	1:250 000	whole region	p. 14,15 source F
b. OLI			
(i) Land classification	1:250 000	whole region	p. 16,17 source I,O
(ii) Timber Use Capability			

3. Soil Survey

a. Ontario Soil Survey	1:63 360 1:50 000 1:20 000	whole region (1 report only)	p. 22-24 source C,L
b. Intensive Soil Survey	1: 4000	few small properties	p. 31 source D

4. Forest Ecosystem Surveys

a. Forest Productivity Surveys		various plots	p. 39,40 source P

SOUTHWESTERN REGION

1. Surficial Geology

a. Physiography of Southern Ontario (Maps 2224,2225,2226)	1:253 440	whole region	p. 3 source J,O
b. Quaternary Geology of Southern Ontario	1:50 000 1:63 360	most of region	p. 4 source E,J,N

2. Land Inventory

a. CLI	1:250 000	whole region	p. 14,15 source F
b. OLI			
(i) Land classification	1:250,000	whole region	p. 16,17
(ii) Timber Use Capability			source C,L

3. Soil Survey

a. Ontario Soil Survey	1:126 720 1:63 360 1:50 000 1:25 000	whole region	p. 22-24 source C,L

4. Forest Ecosystem Surveys

a. Forest Productivity Surveys		various plots	p. 39,40 source P

SOURCES

A. Abitibi-Price Inc.
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P.O. Box 2510
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B. Canada Map Office, Survey and Mapping Branch
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615 Booth St.
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C. Consumer Information Services
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D. Fast Growing Hardwoods Group
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E. Geological Survey of Canada
Department of Energy, Mines and Resources
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F. Lands Directorate
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G. Northeastern Regional Office
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H. Northern Regional Office
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I. Ontario Centre for Remote Sensing
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J. Ontario Geological Survey
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and Mines
77 Grenville St.
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K. Ontario Government Book Store
Main Floor, 880 Bay St.
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L. Ontario Institute of Pedology
Guelph Agriculture Centre
P.O. Box 1030
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M. Ontario Tree Improvement and
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N. Publications Services Section
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O. Public Service Centre
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P. Timber Sales Branch
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Q. Canadian Forestry Service
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